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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,971	09/25/2000	Mitihiko Takase	10873.574US01	3140

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EXAMINER

GONZALEZ, JULIO C

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

## Application No.

09/668,971

## Applicant(s)

TAKASE ET AL.

## Examiner

Julio C. Gonzalez

## Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-8, 22-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims disclosed that the interdigital transducers are not covered with a thin film, however, the specifications in page 9, lines 36-37, disclosed that an insulating layer is on the surface of the IDT electrodes, which classifies as a thin film. Also, figures 2 and 7C show an insulating layer, which covers the IDT's. Also, claim 24 discloses that the material of the piezoelectric substrate is the same as of the conductive regions. The statement may be confusing since the piezoelectric substrate is disclosed to be made of  $\text{LiTaO}_3$  or  $\text{LiNbO}_3$ . Now the conductive regions are disclosed to be made of by a process of doping (page 8, lines 14-16; page 11, lines 30-37). However, the doping material is not of the same material as of the piezoelectric substrate since the doping material is disclosed to be

made of nitrogen ions, oxygen radicals and boron (page 12, lines 11, 19; page 15, lines 11-13; page 17, line 10; page 18, line 2).

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim discloses that the material of the piezoelectric substrate is made of the same material of the conductive regions. The material of the piezoelectric substrate is disclose to be made of  $\text{LiTaO}_3$  or  $\text{LiNbO}_3$ . Are the conductive regions made of or doped with  $\text{LiTaO}_3$  or  $\text{LiNbO}_3$ ? If so, then how can the conductive regions have a lower resistance if both are made of the same material? The specifications disclose that the doping regions are doped with a differential material from  $\text{LiTaO}_3$  or  $\text{LiNbO}_3$  then how can they be made of the same material?

In order to advance prosecution in the merits, the Prior Art will be applied as best understood by the examiner.

*Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5, 6 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et al in view of Yamada et al and Nakahata et al (US 5,221,870).

Higaki discloses a surface acoustic wave device comprising a piezoelectric substrate 4, a first and second transducer 5 opposed to each other, the substrate including a region (see abstract) with a thickness of 50nm (column 10, lines 58,59) and an insulating layer 6 on top of the electrodes (see figure 10).

Moreover, there is a plurality of conductive regions 11 between the first and second transducer and current flows between the first and second transducer via conductive regions (see figure 1).

However, Higaki et al does not disclose having a surface between the IDT's that has a lower resistance than an inner portion of the piezoelectric substrate.

On the other hand, Yamada et al discloses for the purpose of suppressing generation of noise, an IDT 12 and IDT 12', a piezoelectric substrate 11 and a

surface 13 with a lower resistance than an inner portion of the substrate 11 (see figure 1A, column 2, lines 19-21). Moreover, due to the resistance 13, current may be able to flow between the IDT's 12 and 12' since electrical signals may flow between the IDT's (column 2, lines 38-42).

However, neither Higaki et al nor Yamada et al disclose explicitly having an IDT that is not cover by a thin film.

Even though it is well known in the art that IDT's may not be covered with a thin film and the specification/disclosure of the present invention may not disclose such limitation, the reference of Nakahata et al discloses for the purpose of providing a SAW device with higher SAW velocity, a piezoelectric substrate 9, first and second IDT's 13, which are opposite to each other and the IDT's 13 are not covered with a thin film (see figures 6-10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design a surface acoustic wave device as disclosed by Higaki et al and to modify the invention by explicitly making a portion between the IDT's with a lower resistance than an inner portion for the purpose of suppressing generation of noise as disclosed by Yamada et al and not to cover the IDT's for the purpose of providing a SAW device with higher SAW velocity as disclosed by Nakahata.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et al and Yamada et al and Nakahata et al as applied to claim 6 above, and further in view of Ohkubo et al.

The combined surface acoustic device discloses all of the elements above. However, the combined surface acoustic device does not disclose that the insulating layer is made of metal nitride.

On the other hand, Ohkubo et al discloses for the purpose of processing signals at high frequencies without increasing propagation losses that the insulating layers can be made of metal oxide or metal nitride (column 17, lines 38-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the combined surface acoustic wave device as disclosed above and to modify the invention by using nitride in an insulating layer for the purpose of processing signals at high frequencies without increasing propagation losses as disclosed by Ohkubo et al.

4. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et al and Yamada et al and Nakahata et al as applied to claims 3 and 6 above.

The combined surface acoustic device discloses all of the elements above. However, the combined surface acoustic device does not disclose the ranges of the resistance of the region and the insulating layer.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to come with those optimum ranges that the applicant discloses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In *re Aller*, 105 USPQ 233.

### ***Response to Arguments***

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., sending specific signals among the electrical signals applied to the first IDT can be transmitted selectively to the second IDT and a SAW device can suppress discharge between IDT electrodes while providing excellent characteristics for propagation of surface acoustic waves) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).



6. Applicant's arguments with respect to claims 1-8 and 22-24 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments filed 02/07/03 have been fully considered but they are not persuasive.

There seems to be a contradiction between the original disclosure and the amendment done to the claims. Mainly, Higaki et al and Nakahata et al disclose having IDT's on a piezoelectric substrate and Yamada et al teaches directly to an acoustic wave device that a material with a lower resistance than the piezoelectric substrate may be used.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the

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advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jcg

April 17, 2003

A handwritten signature in cursive script, appearing to read "Dangle", written in black ink.

DANGLE  
PRIMARY EXAMINER